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General Notes.

GEOGRAPHY AND TRAVELS.

Antarctic Exploration.—The most important geographical discoveries made in the Antarctic regions since Ross traced a part of Victoria Land's coast, and saw its smoking mountains, fifty-two years ago, have just been reported by an old and well-known Norwegian whaler, Captain Larsen, who, by this time, is undoubtedly on his way home with a cargo of seals. His discoveries were made in the latter part of November and early in December last, on the steam whaler Jason. Later he went north to the Falkland Islands, where he found an opportunity to send home his log for this period. He then returned to the sealing grounds near the Antarctic Circle. His log was forwarded from Norway by Mr. Christensen of Sandefjord to Dr. John Murray, the well-known Scottish scientist and member of the Challenger expedition, who has just published the extract from the Jason's journal in the *Scottish Geographical Magazine.* Only a few lines, including the latitude and longitude attained, are given in the log to each day's events, and the narrative is therefore lacking in detail. When Capt. Larsen returns to Europe, he will doubtless give a full account of his interesting voyage.

If the reader will refer to a map of the Antarctic regions, he will see a large land mass, known as Graham's Land, lying across the Antarctic Circle, south of Cape Horn. Except Victoria Land, which lies on the other side of the Antarctic area, Graham's land is the largest bit of *terra firma* that has yet been found in South Polar waters. It was discovered by John Biscoe in 1831, and a brief allusion to the exploration there is necessary in order to understand what Larsen has achieved. Biscoe skirted its lofty western coast for about 200 miles, and, landing on little Adelaide Island, not far from the mainland, he was the first to set foot on shore within the Antarctic Circle. No one ever saw any other part of Graham's Land except Ross, over fifty years ago, and the Scottish and Norwegian whalers who were there in the season of 1892-93. Capt. Larsen's recent achievement was to steam for days along the east coast of the unknown land, and when he was finally compelled to turn north again, he could still see the lofty summit of the mainland stretching south and east as far as the eye could reach. Dr. John Murray and other authorities believe that in those days he was skirting a part of the coast of the great Antarctic continent, and while he was adding to our knowledge of the coast lines around the South Pole, he also discovered some volcanoes in a highly active state, showing that Plutonic energy in that part of the world has not yet died out, and that its activity there is more widely distributed than we had any reason to suppose.

The ice conditions greatly favored Capt. Larsen, for he found a comparatively open sea, and was able to advance about one hundred miles south of the Antarctic Circle. Only the year before the whalers had found the sea packed with ice almost to the extreme northern part of Graham's Land. As they looked south they saw a chain of bergs towering high above their ships, which effectually barred their progress in that direction. After Ross, in his sailing ships Erebus and Terror, had discovered Victoria Land and skirted its coast for hundreds of miles, he spent almost the entire season of 1842-43 near the north end of Graham's Land trying in vain to push his way through the ice-encumbered sea and the great chain of bergs. He was not able, however, to advance toward the south until he went far east, out of sight of Graham's Land, whose mystery he had hoped to solve. Larsen had a very different experience in November and December last. The weather was fine and warm, and there was plenty of sunshine and little fog. The air and sea teemed with animal life, for many birds, whales and seals were seen, and, best of all, the white, east coast of Graham's Land, rising here and there into lofty peaks, stood out clearly in view. He followed it straight to the south, until, at its furthest point, he saw it rising to still loftier heights and stretching away to the southeast and east.

From Capt. Larsen's log, and from the observations of the whalers at the north end of Graham's Land, in the previous season, we are able to get some idea of this *terra incognita*. According to his log, Capt. Larsen steamed along this east coast for 230 miles, the coast line stretching away a little east of south, a high, rocky shore, most of it a few miles west of 60° west longitude from Greenwich. Right at the Antarctic Circle is a very high peak, most of which is bare of snow. The shore front is skirted with an ice barrier that runs about five miles out to sea, and is from twenty-five to sixty feet high. The land is covered with an ice cap and glaciers flow down the valleys, but in the narrow, northern part of the land they are, of course, small, and do not produce icebergs over sixty to seventy feet in height. In 1892-93 the whalers saw in the neighboring waters bergs that were 200 feet or more in height, and their depth below the surface must have been at least 1,400 feet. It is certain that they come from some more southern part of the Antarctic region.

Skirting the shores, Larsen saw numbers of islands and rocks, all volcanic and mostly basaltic, rising out of the sea almost as perpendicular as the icebergs, and presenting little surface on which snow can rest. He succeeded, however, in landing on Seymour Island, and pushed some distance into it, though the walk was most difficult across the deep valleys and over the high rocks. Great numbers of penguins had their nests there, and in the interior he found several dead seals. These penguins are peculiar to the Antarctic regions, and their rookeries are very curious. They are occupied by countless numbers of the common black-throated penguins, and the nests are crowded together in square blocks formed by paths intersecting one another almost at right angles. The whalers of the previous year said that these rookeries, viewed through a telescope from the ship's head, had the appearance of hair brushes, the penguins representing the bristles.

It was about eighty miles north of the Antarctic Circle that Larsen discovered a chain of five little islands, extending in a straight line from northwest to southeast. The most northern is about ten miles from the mainland. Two of these islands are active volcanoes. The captain and his mate fastened on their snow-shoes and crossed on the ice to one of the islands. A large volume of smoke poured from both of the volcanoes, but neither of them was ejecting lava or solid matter at the time, though the ice in the neighborhood was strewn with volcanic stones that had recently been hurled out of the craters. There was no snow on these volcanic masses.

On his journey south, Capt. Larsen saw many whales and seals. It is well-known that the Dundee whalers turned their attention to the Antarctic regions in 1892, in the hope of finding the true whalebone whale, which Sir James Ross believed he saw there. The Dundee fleet, however, saw neither this variety nor any sperm whale. They saw any number of finners, which were so tame that the ships actually struck them sometimes before they would get out of the way. Now and then these enormous creatures, not less then eighty feet in length, jump like a salmon, every portion of their bodies being clear of the water. The hunchback whale, which was found there in great numbers, is another interesting species. The whalers say that neither salmon nor trout fishing can equal the hunchback for sport. Larsen hunted one which, on being harpooned, ran the five lines in the first boat straight out and got free. Four additional harpoons and six rockets were fired into it. It fought a thirteen hours' battle and then escaped, taking with it a good deal of line, two of the harpoons, and all of the rockets. Larsen saw three other species of whales there, but none of much commercial value, while the seals are desirable chiefly for their oil.

The most southern point reached by Capt. Larsen was in 68° 10 south latitude. Had he advanced a few miles further, it would have been necessary to turn quite abruptly to the east, for he saw the shore line bend around till it ran almost due east and west, and behind it was high land covered with snow. He had followed the coast on the east side of Graham's Land as far as Biscoe had traced it on the west. On the map the reader will find Alexander I. Land, which is due west of the high land seen by Larsen when he turned his ship to go north again. Dr. Murray believes that Alexander I. Land is a part of the west coast of Graham's Land, and that this landmass, which Biscoe and Larsen proved to widen rapidly toward the south, is only a peninsula of the continent of Antarctica.

It is interesting to consider the geographical significance of Larsen's voyage. Our maps show that all around the Antarctic area, in the neighborhood of the South Polar circle, bits of land have been discovered. It is noteworthy that scarcely one of these bits of land has been explored in its whole extent. The explorers did not ascertain whether the land they saw was islands or projections from some great landmass. Discoverers have very rarely been able to effect a landing on account of the belt of pack ice or ice floes, often ten to twenty miles wide, that separated them from the shore. There are several excellent reasons why many of the leading geographers and geologists believe that these various lands—Victoria, Graham, Wilkes, Adelie, Clarie, Sabrina and Termination Lands and some others, are merely parts of the outer edge of a large continent. To mention here only one of these evidences, the Challenger expedition, sounding in Antarctic waters, brought to light material which is regarded as strongly indicating the proximity of a landmass of continental proportions. Ross believed this when he was in the region where Larsen has made his reconnoissance. Ross said that though the ice prevented him from taking his vessel south, he believed he could have landed and travelled over the continent. Larsen's work adds strength to the theory, for we see Graham's Land rapidly widening as its coasts are followed toward Victoria Land. A great deal of the area within the Antarctic Circle may be covered with the sea and still leave room there for a land of continental extent. It has been observed, when possible to approach the land, that there is much similarity in the geological structure of the apparently detached masses. Dr. Wild, of the Challenger expedition, has observed that Graham's Land and Victoria Land are remarkable for the height of their mountain ranges, rising from the sea to 7,000 feet in the former, and 15,000 feet in the latter country, and the shores of both are guarded by numerous islands, mostly of volcanic origin. Wild, Murray, and others say that we are justified in concluding that Victoria Land, whose east coast line was traced by Sir James Ross for more than 500 miles, must extend much further to the west and south, and that probably on its ice cap will be found the present position of the South Magnetic Pole.

Dr. Murray points out that the summer excursion of Larsen's little whaler, shows what large additions might, in a short time, be made in our geographical knowledge by a properly equipped expedition provided with steam power. British geographers will be more than ever encouraged, now that the news of Larsen's work has come to them, to redouble their present efforts to induce their Government to send out an expedition. The expenditure will hardly be justified unless the proposed expedition is accompanied by scientific men and fitted with all the apparatus of scientific investigation. Such a party and equipment would enrich almost every department of natural science. There is no doubt that the science of our day is demanding such an investigation, and, in all probability, it will be carried out within the next few years. Not only scientific men, but also a considerable part of the public, would like to know the nature and extent of this Antarctic continent and what may be learned by pushing into its interior. It is highly desirable, also, as the advocates of South Polar exploration have shown, to ascertain the depth and condition of the ice cap, to sound the ocean depths, to learn its various temperatures, from the surface to the bottom, to trawl up the animals on the sea floor, and study the nature of the marine deposits. These are among the questions that explorers will be called upon to solve in the prolific field of South Polar research.—CYRUS C. ADAMS, in *New York Sun.*